

Rec'd 16 FEB 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
4 March 2004 (04.03.2004)

PCT

(10) International Publication Number  
WO 2004/019311 A3

(51) International Patent Classification<sup>7</sup>: G09G 3/32  
(21) International Application Number:  
PCT/IB2003/003281

(22) International Filing Date: 18 July 2003 (18.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
02078454.2 21 August 2002 (21.08.2002) EP

(71) Applicant (for all designated States except US): KONIN-  
KL.IJKE PHILIPS ELECTRONICS N.V. [NL/NL];  
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): SEMPEL, Adrianus  
[NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven  
(NL).

(74) Agent: RAAP, Adriaan, Y.; Philips Intellectual Property  
& Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven  
(NL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,  
SD, SE, SG, SK, SI, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

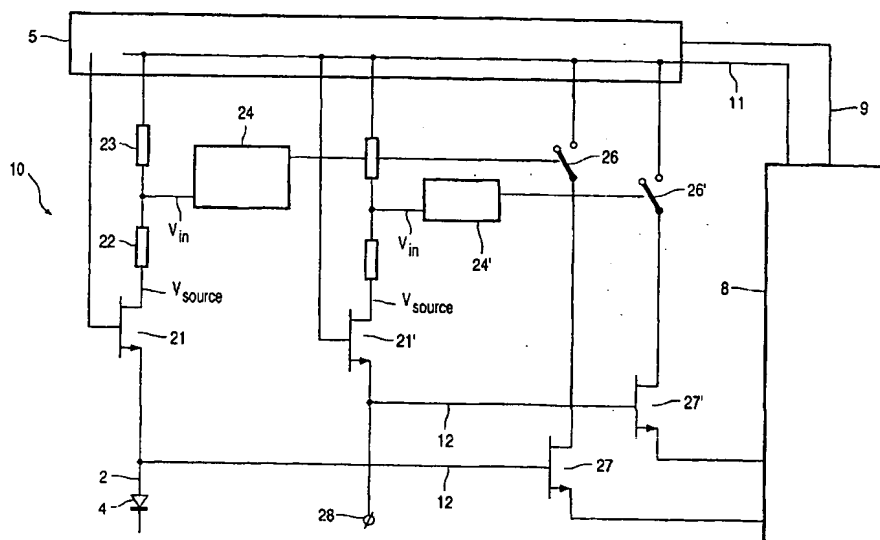
(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

as to applicant's entitlement to apply for and be granted  
a patent (Rule 4.17(ii)) for the following designations AE,  
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES,  
FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH,  
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO  
patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG,

[Continued on next page]

(54) Title: DISPLAY DEVICE



(57) Abstract: In a driver for a luminescent display the operating voltage of a driver circuit is monitored to prevent extra dissipation due to open output connections (28) of the driver circuit. The monitoring is also used for minimizing power dissipation.

WO 2004/019311 A3

BEST AVAILABLE COPY



ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— with international search report

**(88) Date of publication of the international search report:**

17 June 2004

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB 03/03281

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G09G3/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/043168 A1 (KOYAMA ET AL.) 22 November 2001 (2001-11-22)  page 6, paragraph 141 - paragraph 146 ----	1, 2, 4, 5, 7-11, 13, 14
A	WO 02 31802 A (THREE FIVE SYSTEMS) 18 April 2002 (2002-04-18) column 6, line 20 - column 8, line 15; figures 2-4 ----	1, 10
A	US 6 414 443 B2 (TSURUOKA ET AL.) 2 July 2002 (2002-07-02) column 2, line 33 - line 67 ----	1, 10
A	US 2002/060677 A1 (RA KWANG-HYUN) 23 May 2002 (2002-05-23) page 1, right-hand column - page 2, paragraph 19 ----- -/-	3, 6, 15, 16

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the International filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the International filing date but later than the priority date claimed

\*T\* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

6 February 2004

Date of mailing of the international search report

10/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Lange, J

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 953 958 A (CANON) 3 November 1999 (1999-11-03) column 38, paragraph 235 -column 39 ----	3,6,15, 16
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 01, 31 January 2000 (2000-01-31) & JP 11 272223 A (TOYOTA MOTOR), 8 October 1999 (1999-10-08) abstract -----	1,10
A	US 5 594 463 A (SAKAMOTO) 14 January 1997 (1997-01-14) column 1, line 53 -column 3, line 4 -----	1,10

## INTERNATIONAL SEARCH REPORT

 International application No  
 PCT/IB-03/03281

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2001043168	A1	22-11-2001	JP 2002032037 A	31-01-2002
WO 0231802	A	18-04-2002	AU 9671701 A WO 0231802 A2	22-04-2002 18-04-2002
US 6414443	B2	16-08-2001	JP 2001223074 A US 2001013758 A1	17-08-2001 16-08-2001
US 2002060677	A1	23-05-2002	KR 2002040144 A JP 2002196743 A TW 546611 B	30-05-2002 12-07-2002 11-08-2003
EP 0953958	A	03-11-1999	JP 3305283 B2 JP 2000310970 A EP 0953958 A2 JP 2000338929 A	22-07-2002 07-11-2000 03-11-1999 08-12-2000
JP 11272223	A	08-10-1999	NONE	
US 5594463	A	14-01-1997	JP 3313830 B2 JP 7036409 A JP 3390214 B2 JP 7036410 A	12-08-2002 07-02-1995 24-03-2003 07-02-1995

BEST AVAILABLE COPY